

REMARKS

Claims 1-3, and 5-47 are pending in this application. Claims 1, 5, and 41 have been amended herein, and claim 4 has been canceled. In view of these amendments and remarks, Applicants respectfully request reconsideration of the claims.

I. AMENDMENTS

Applicants amended claim 1 to clarify that the digital signal comes from within a processing portion of the signal, where the signal has a high correlation to the RF output of the RF circuit, and that the observation occurs from outside of the RF circuit itself. Support for this amendment can be found at least at paragraph 49 of the Specification and original claim 4. No new matter was added. Claim 5 was amended to change its dependence from canceled claim 4.

Claim 41 was amended to clarify that the observation occurs from a test circuit. Again, no new matter was added.

II. REJECTIONS UNDER 35 U.S.C. § 102

Claims 1, 3-8, 11, 13-17, 19-22, 24, 27-31, 41, 43, and 45-46 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,486,792 issued to Girardeau, Jr. (hereinafter “*Girardeau*”).

“A claim is anticipated *only if* each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). Moreover, “[t]he *identical invention* must be shown in as complete detail as is contained in the . . . claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989) (emphasis added).

Claim 1, as amended, requires, observing “a digital signal from within a processing portion of the RF circuit . . . and wherein the observing occurs outside of the RF circuit”

Claim 41, as amended, requires “wherein the performance of the DCO can be ascertained by a test circuit observing an output of the phase detector” The Examiner’s cited selections from *Girardeau* disclose the digital phase lock loop (DPLL), itself, monitoring its own feedback signal in order to adjust its feedback divider ratio to maintain satisfactory operation of the DPLL. Office Action, pp. 2 & 7; *Girardeau*, Col. 2, lns 31-35, Col. 3, ln 55 – Col. 4, ln 4. In contrast, claims 1 and 41 each provide for a test circuit or somewhere outside of the RF circuit observing the digital signal. Moreover, claim 1 requires that the digital signal being observed is from within the processing portion of the RF circuit. The feedback signal, as discussed in *Girardeau*, is a signal based on the output of the DPLL. *See* Figure 1. Thus, it is not within the processing portion of the RF circuit, as required by claim 1. Accordingly, claims 1 and 41 are allowable over *Girardeau*. Applicants, therefore, respectfully request that the rejection of claim 1 be withdrawn.

Claims 2-11 depend from claim 1 and inherit all of the limitations of claim 1. Accordingly, claims 2-11 are allowable for at least the reasons discussed above. Applicants, therefore, respectfully request that the rejections of claims 1-11 likewise be withdrawn.

III. REJECTIONS UNDER 35 U.S.C. § 103

In *Graham v. John Deere Co. of Kansas City*, the Supreme Court set out a framework for applying the statutory language of §103. 383 U.S. 1 (1966). The Court stated:

Under 35 U.S.C. §103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such

secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. *Id.*, at 17–18.

The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. *KSR Int’l Co., v. Teleflex, Inc.*, 550 U.S. _____ (2007).

Patents for obvious combinations must generally be disallowed because a “patent for a combination which only unites old elements with no change in their respective functions . . . obviously withdraws what is already known into the field of its monopoly and diminishes the resources available to skillful men.” *Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.*, 340 U. S. 147, 152 (1950). However, when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious. *United States v. Adams*, 383 U. S. 39, 51-52 (1966); *see also KSR Int’l*, 550 U.S. at _____. Moreover, no holding or doctrine diminishes the necessity of the combined teachings or obvious elements teaching or suggesting each and every limitation of the claimed invention.

A. Claim 2

Claim 2 is rejected under 35 U.S.C. § 103(a) as being unpatentable over *Girardeau*, as applied to Claims 1, in view of U.S. Patent No. 6,885,700 B1 issued to Kim et al. (hereinafter “*Kim*”).

The Examiner admits that *Girardeau* fails to teach the testing being performed using built-in self test (BIST) techniques. Office Action, p. 9. In order to cure this deficiency, the Examiner offers *Kim*. However, as noted above, *Girardeau* also fails to teach the digital signal being observed from a test circuit or, at least, outside of the RF circuit, as required by claim 1.

Claim 2 depends from claim 1 and inherits each of the limitations of claim 1. The Examiner does not offer *Kim* to cure this deficiency, nor do the cited selections of *Kim* teach such limitations. As such, the combination of *Girardeau* and *Kim* does not teach or suggest each and every limitation of claim 2. Applicants, therefore, respectfully request the Examiner to withdraw his rejection of record.

B. Claims 10 and 44

Claims 10 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Girardeau*, as applied to claim 1, in view of U.S. Patent No. 5,825,253 issued to Mathe et al. (hereinafter “*Mathe*”).

The Examiner admits that *Girardeau* fails to teach an all-digital PLL operating in an I-mode, where the signal is an output of an infinite impulse response filter coupled to the output of a loop filter. Office Action, p. 9. In order to cure this deficiency, the Examiner offers *Mathe*. However, as noted above, *Girardeau* also fails to teach the digital signal being observed from a test circuit or, at least, outside of the RF circuit and that the digital signal is within the processing portion of the RF circuit, as required by claims 1 and 41. Claims 10 and 44 depend from claims 1 and 41, respectively, and inherit each of the limitations of their respective base claim. The Examiner does not offer *Mathe* to cure this deficiency, nor do the cited selections of *Mathe* teach such limitations. As such, the combination of *Girardeau* and *Mathe* does not teach or suggest each and every limitation of claims 10 and 44. Applicants, therefore, respectfully request the Examiner to withdraw his rejection of record.

C. Claims 12 and 47

Claims 12 and 47 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Girardeau*, as applied to claim 1, in view of U.S. Patent No. 5,768,326 issued to Koshiro et al. (hereinafter “*Koshiro*”).

The Examiner admits that *Girardeau* fails to teach that the signal is an output of a gain normalization block. Office Action, p. 10. In order to cure this deficiency, the Examiner offers *Koshiro*. However, as noted above, *Girardeau* also fails to teach the digital signal being observed from a test circuit or, at least, outside of the RF circuit and that the digital signal is within the processing portion of the RF circuit, as required by claims 1 and 41. Claims 12 and 47 depend from claims 1 and 41, respectively, and inherit each of the limitations of their respective base claim. The Examiner does not offer *Koshiro* to cure this deficiency, nor do the cited selections of *Koshiro* teach such limitations. As such, the combination of *Girardeau* and *Koshiro* does not teach or suggest each and every limitation of claims 12 and 47. Applicants, therefore, respectfully request the Examiner to withdraw his rejection of record.

D. Claim 18

Claim 18 is rejected under 35 U.S.C. § 103(a) as being unpatentable over *Girardeau*, as applied to claim 1, in view of U.S. Patent No. 4,086,539 issued to Gustafson et al. (hereinafter “*Gustafson*”).

The Examiner admits that *Girardeau* fails to teach that if a variance in the magnitude of the signal is less than a specified threshold, then the frequency has been locked. Office Action, p. 12. In order to cure this deficiency, the Examiner offers *Gustafson*. However, as noted above, *Girardeau* also fails to teach the digital signal being observed from a test circuit or, at least, outside of the RF circuit and that the digital signal is within the processing portion of the RF

circuit, as required by claim 1. Claim 18 depends from claim 1 and inherits each of the limitations of claim 1. The Examiner does not offer *Gustafson* to cure this deficiency, nor do the cited selections of *Gustafson* teach such limitations. As such, the combination of *Girardeau* and *Gustafson* does not teach or suggest each and every limitation of claim 18. Applicants, therefore, respectfully request the Examiner to withdraw his rejection of record.

E. Claim 42

Claim 42 is rejected under 35 U.S.C. § 103(a) as being unpatentable over *Girardeau*, as applied to claim 1, in view of U.S. Patent No. 7,079,611 B2 issued to Knudsen (hereinafter “*Knudsen*”).

The Examiner admits that *Girardeau* fails to teach that if a variance in the magnitude of the signal is less than a specified threshold, then the frequency has been locked. Office Action, p. 12. In order to cure this deficiency, the Examiner offers *Knudsen*. However, as noted above, *Girardeau* also fails to teach the digital signal being observed from a test circuit or, at least, outside of the RF circuit and that the digital signal is within the processing portion of the RF circuit, as required by claim 41. Claim 42 depends from claim 41 and inherits each of the limitations of claim 41. The Examiner does not offer *Knudsen* to cure this deficiency, nor do the cited selections of *Knudsen* teach such limitations. As such, the combination of *Girardeau* and *Knudsen* does not teach or suggest each and every limitation of claim 42. Applicants, therefore, respectfully request the Examiner to withdraw his rejection of record.

F. Claims 1, 9, 23, and 32-41

Claims 1, 9, 23, and 32-41 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,295,079 issued to Wong et al. (hereinafter “*Wong*”), in view of *Girardeau*.

The Examiner admits that *Wong* fails to specifically disclose that the processor is coupled to an RF circuit. Office Action, p. 13. The Examiner offers *Girardeau* to cure this deficiency. However, claim 1, as amended, requires, “wherein the signal has a high degree of correlation with an RF output of the RF circuit” It is well known in the art that UP/DOWN phase error direction signals, as taught by *Wong*, are extremely representations of a signal and, thus, do not exhibit a “high degree of correlation with an RF output of the RF circuit”, as required by claim 1. *Girardeau* does not teach or suggest such a limitation. Therefore, the combination of *Wong* and *Girardeau* do not teach or even suggest each and every limitation of claim 1. Claim 1 is, thus, patentable over *Wong* and *Girardeau*.

Claim 32 requires, “circuitry to manipulate digital signals from the RF circuit to provide a performance metric for the RF circuit” *Wong* teaches only circuit testing and does not teach that a metric is generated representing the estimated *performance* of the RF circuit. *Girardeau* also does not teach such limitation. Therefore, the combination of *Wong* and *Girardeau* does not teach or suggest each and every limitation of claim 32. Claim 32 is, thus, patentable over *Wong* and *Girardeau*.

Claim 41 requires, “the phase detector containing circuitry to compute a difference between the reference phase and a variable phase” *Wong* only teaches UP/DOWN phase direction information, which is not the phase error estimation signal. There is no magnitude information, only the direction. Similarly, *Girardeau* only teaches issuing a signal indicating an early phase difference or a late phase difference. It also does not calculate a difference between the reference phase and a variable phase, as required in claim 41. Therefore, neither *Wong* nor *Girardeau*, whether alone or in combination, teach or suggest each and every limitation of the claimed invention. Claim 41 is, thus, patentable over *Wong* and *Girardeau*.

Claims 9, 23, and 33-40 depend from claims 1 and 32, respectively, and, thus, inherit all of the limitations of claims 1 and 32. Accordingly, claims 9, 23, and 33-40 are allowable for at least the reasons discussed above. Applicants, therefore, respectfully request that the rejections of claims 9, 23, and 33-40 likewise be withdrawn

G. Claims 25-26

Claims 25-26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Wong* and *Girardeau*, as applied to claim 32, and further in view *Gustafson*.

Claims 25-26 depend from claim 1 and, thus, inherit each of the limitations of claim 1. As noted above, neither *Wong* nor *Girardeau* teach or suggest a “high degree of correlation with an RF output of the RF circuit”, as required by amended claim 1. The Examiner does not offer *Gustafson* for such limitation, nor does *Gustafson*, in fact, teach such limitation. Thus, the combination of *Wong*, *Girardeau*, and *Gustafson* does not teach or suggest each and every limitation of the present invention. Applicants, therefore, respectfully request the Examiner to withdraw his rejection to claims 25 and 26.

Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Thomas J. Meaney, Applicants' attorney, at 972-732-1001, so that such issues may be resolved as expeditiously as possible. No fee is believed due in connection with this filing. However, should one be deemed due, the Commissioner is hereby authorized to charge Deposit Account No. 50-1065.

Respectfully submitted,

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